

MEDIA
SYSTEMS
TECHNOLOGY



TM

MSTTM

MEDIA SYSTEMS TECHNOLOGY, INC.

Media Systems Technology, Inc.
16950 Armstrong Avenue Irvine, CA 92714-4965
Phone: (714) 957-0240



PRESS RELEASE

MEDIA SYSTEMS TECHNOLOGY, INC. Company Profile

Media Systems Technology, Inc. (MST), recognizing an opportunity created by the boom in the computer industry and, particularly, the explosion of microcomputers and accompanying software development, has been a pioneer in automatic floppy disk duplication products from its beginning.

Founded in 1978, the privately held, Irvine, California-based company has introduced a number of industry firsts.

MST was the leader in offering the marketplace automatic desktop duplication units and the first to provide automatic initialization and verification capabilities.

Originally designed for high volume diskette duplication, the firm's first products were marketed to large computer system manufacturers, media manufacturers and software publishers.

With the growth of personal computers, MST has expanded its product line to serve customers of all sizes, including Fortune 1000's and small software companies, to name a few.

MST now manufactures a complete line of duplication systems for both 8 inch and 5¼ inch floppy-disks and, most recently, introduced two duplication models for 3½ inch microfloppy diskettes. MST also offers a series of high-

- more -

Media Systems Technology 16950 Armstrong Ave., Irvine, CA 92714 (714) 863-1201 or outside CA 1-800-443-8515

MST Company Profile - 2 2 2

speed diskette processing systems that can duplicate between 30,00 and 40,000 diskettes per week. These systems feature automatic diskette loading and formatting and can simultaneously copy and verify all material.

For the large corporations that copy software for internal use, the software houses that sell their products to distributors and retailers and the personal, business and home computer manufacturers that use copiers as quality control devices, MST has developed a desk-top copier. Two lines are available: stand-alone systems and slave systems. Stand-alone systems can process 2,500 to 7,000 5¼ inch diskettes per week. Both lines, or systems, have automatic loading and can format, copy and completely verify 5¼ inch diskettes in many formats.

The sales and distribution of MST's copier product line are handled through district sales offices staffed by MST employees. These offices are located in Irvine, San Jose, Dallas, Chicago, Boston and Atlanta.

In addition to manufacturing disk processing systems, MST performs a full software publishing and manufacturing service for personal, business and home-computer software industries. Built on the same principal as book publishing, software publishing involves both mass production and distribution to a variety of clients

- more -

MST Company Profile - 3 3 3

including software developers, publishers, wholesalers and systems houses. This publishing division grew out of a copy service that MST has provided for its clients in the past and was a logical expansion of MST's business.

The publishing service includes everything from supplying blank diskettes and envelopes, to assembling and distributing the finished software product. MST uses its own disk production systems for duplication, certification, serialization and copy protection. In addition, MST has the capability to produce more than 150 standard or custom-tailored software formats, as well as provide complete packaging design and total printing services. The facilities used for software manufacturing are currently located in Irvine, CA and in Hopkinton, MA.

With a staff of 115 employees in many specialized areas, MST is able to serve a wide variety of clients. Among the media manufacturers who are MST customers are 3M, Verbatim, Memorex, Dysan and Nashua. Personal-computer manufacturers include IBM Corp., Apple Computer Inc., AT & T, Digital Equipment Corp. and Acorn (U.K.). Software publishers include IBM, Apple, DEC, Peachtree, Software Arts and Tandy. Large end-user customers include Connecticut Mutual Life Insurance, Transamerica, American Airlines, Coopers & Lybrand and Eastman Kodak.

PRESS RELEASE

Contact: Mr. A.M. (Al) Cosentino
President
714/863-1201

or: Ed Leatherwood
Basso & Associates, Inc.
714/641-0111

MEDIA SYSTEMS TECHNOLOGY ADDS FAMILY OF WINCHESTER-BASED DESKTOP COPIERS TO ITS PRODUCT LINE

IRVINE, CA, November 14, 1984--Media Systems

Technology, Inc. (MST), has expanded its new Winchester disk-based automatic desktop diskette copiers with the addition of a new 5000 series and enhancements to the 6000 series, according to A.M. (Al) Cosentino, president and chief executive officer.

Each product line includes three models for 5¼ inch 48/96 TPI and 3.5 inch 135 TPI diskette duplication.

Prices range from \$12,500, to \$22, 000, and product is available immediately.

The 6000 series models are high volume systems intended for heavy production environments and have been enhanced to include 100 diskette input and output hoppers, as well as GCR copying capabilities to support Apple and Commodore. The series processes diskettes at a rate of 53 to 183 copies per hour, depending on the model and format being duplicated.

The 5000 series, which can be upgraded to 6000 models, uses 40 diskette hoppers and is designed as a highly cost-effective copier for lower volume requirements. The new

- more -

Media Systems Technology 16950 Armstrong Ave., Irvine, CA 92714 (714) 863-1201 or outside CA 1-800-443-8515

5000/6000 Series - 2 2 2

5000 series copiers replace the older 5248/5296 series, providing greater throughput, by use of a Winchester disk drive, at a comparable price. The 5000 series copies from 27 to 88 diskettes per hour.

The 5000/6000 series automatically formats, copies, verifies and sorts diskettes with minimal operator intervention. Only about 15 minutes of operator training is required.

Complementing the ease of use are a number of sophisticated design features that provide users with capabilities unavailable previously.

A job streaming mode of operation permits the user to assemble a series of jobs in the hopper. Under program control, they are automatically copied in the sequence specified.

MST's unique electronic margin code testing technique allows each copier to recognize and reject marginal diskettes at a rate that exceeds any other system on the market.

The flexibility of the Winchester disk-based series enables the line to duplicate the majority of formats being produced today.

And every model offers self diagnostics. Data on all elements of production is recorded and analyzed for optimum utilization of the system and proper scheduling of

5000/6000 Series - 3 3 3

preventative maintenance.

"Not only will users receive accurate copies, disk after disk," noted Cosentino, "but incorporating the Winchester disk drive into the 5000/6000 series has produced systems that duplicate at the lowest cost per copy rate on the market today."

"Furthermore, a customer's initial investment is always preserved because an entry level 5000 can be field-upgraded into a high-volume, fully featured 6000," he added.

Options for the series include custom copy protection, serialization, GCR for Apple II, Commodore and Macintosh (standard on the 6000), interchangeable 48/96 track drive assembly, 48/96 track slave loader and, for the 5000 series, a high capacity hopper extension.

Media Systems Technology, Inc., a privately held company founded in 1978, is a pioneer and leading manufacturer of automatic diskette processing systems. The company has developed an extensive range of high-speed, multi-station copier systems and a broad line of stand-alone desktop floppy disk copiers. MST's software publishing division provides software manufacturing and complete publishing services.

PRESS RELEASE

Contact: Mr. A.M. (Al) Cosentino
President
714/863-1201

or: Ed Leatherwood
Basso & Associates, Inc.
714/641-0111

MEDIA SYSTEMS TECHNOLOGY ANNOUNCES 5¼", 96 TPI HIGH DENSITY DISKETTE DUPLICATION CAPABILITY

IRVINE, CA, November 14, 1984--Media Systems

Technology, Inc. (MST) has introduced a new 5¼", 96 TPI High Density Autoloader for use with its 825 Automatic Diskette Copier System, it was announced by A.M. (Al) Cosentino, president and chief executive officer.

The Autoloader, Model 050W-10, was developed to support duplication of high density 1.6 MB diskettes, such as those used in the IBM PC-AT. The new unit will process up to 80 double-sided diskettes per hour. A full 825 system will process up to 320 double-sided diskettes per hour.

Selling for \$9,645, the product is available within 30 days of receipt of order at MST.

"Our new unit is the only high density automatic loader on the market," pointed out Cosentino. "And, with the recent PC-AT introduction, it's certainly a timely product offering."

Cosentino elaborated, explaining that with software development for the PC-AT well underway, the actual surge in duplication requirements will come as software companies are

- more -

Media Systems Technology 16950 Armstrong Ave., Irvine, CA 92714 (714) 863-1201 or outside CA 1-800-443-8515

preparing to take their products to market.

"We expect an explosion of PC-AT software in the near future," added Cosentino, "and we're positioned to provide an immediate duplication solution for these marketers."

The 825 system provides high speed automatic duplication and verification of diskettes with minimal operator intervention. Each system supports up to four Autoloaders, or stations.

The four stations operate independently, yet can process diskettes concurrently. This capability is provided by MST's multi-tasking system software. The software also allows simultaneous copying of multiple formats and densities on 5¼", 8" and 3.5" diskettes within a single system.

"The user has tremendous flexibility," noted Cosentino. "Depending on production requirements, the entire system or just one station may be involved in duplication of 5¼", 96 TPI High Density diskettes. The remainder of the system can be assigned other copying tasks."

Media Systems Technology, a privately held company founded in 1978, is a pioneer and leading manufacturer of automatic diskette processing systems. The company has developed an extensive range of high-speed, multi-station copier systems and a broad line of stand-alone desktop floppy-disk copiers. MST's software publishing division provides software manufacturing and complete publishing services.

PRESS RELEASE

REGIS MCKENNA PUBLIC RELATIONS
3000 West MacArthur Boulevard
Suite 600
P.O. Box 6100
Costa Mesa, CA 92626
Patricia O'Leary (714) 241-0275

MD-134

For:

MEDIA SYSTEMS TECHNOLOGY, INC.
16950 Armstrong Avenue
Irvine, CA 92714
Jack Andersen (714) 863-1201

FOR IMMEDIATE RELEASE

MEDIA SYSTEMS TECHNOLOGY IN AGREEMENT WITH TORONTO FIRM
TO OPEN CANADA'S FIRST SOFTWARE PUBLISHING SERVICES OPERATION

IRVINE, Calif., Sept. 20, 1984--Media Systems Technology Inc. (MST), the leading manufacturer of floppy diskette duplication systems and provider of software-publishing services, announced today that it has entered into an agreement with ReproSoft Inc., of Toronto, Canada, to open Canada's first major commercial software--publishing operation. Terms of the agreement were not disclosed.

ReproSoft is a newly created subsidiary of publicly held Baton Broadcasting Inc., of Toronto, Canada's largest broadcasting company.

Jack Andersen, MST vice president of marketing and sales, said the agreement with ReproSoft is the first major step by MST to establish an international network of software-publishing service centers.

(more)

Media Systems Technology 16950 Armstrong Ave., Irvine, CA 92714 (714) 863-1201 or outside CA 1-800-443-8515

Andersen said MST plans to open another facility in Paris by the end of the year in partnership with S. A. Tekelec Airtronic, of France. MST currently has publishing services centers in Irvine, Calif. and Boston.

"This agreement with ReproSoft to jointly establish the first major commercial software publishing operation in Toronto will assist Canada's thriving computer industry," Andersen said.

ReproSoft will also serve as MST's sales representative in Canada for the company's line of industrial and desk-top copiers and peripheral equipment, Andersen said.

William French, vice president and general manager of ReproSoft, said the 15,000-square-foot facility is scheduled to open in early September in Toronto. The center will be equipped with MST's 825 high-speed industrial duplication system, which is capable of processing multiple formats as well as duplicating 8-inch, 5 1/4-inch and 3 1/2-inch software media simultaneously.

In addition to copying software, the center will provide graphic design, packaging and distribution services to software houses and original-equipment manufacturers (OEMs).

Media Systems Technology, a privately held company founded in 1978, designs and markets automatic diskette-processing systems. The company has developed an extensive range of high-speed copier systems and introduced a series of stand-alone desktop floppy-disk copiers. MST's software publishing division provides software manufacturing and complete publishing services.

SYSTEM 6000
APPLICATION NOTE

WHY COPY PROTECT?

INTRODUCTION

Copy Protection seems to be the buzz-word of 1984. All software houses want it; sometimes end-users want it. Many don't know what it is; most don't know how it works. This will attempt to answer some of your questions on the "How and Whys" of copy protection.

BACKGROUND

The software sales marketplace can be viewed in two categories: Home use software (games), and business software. Home software has been protected for years, remains protected, and is probably the single most complex and sophisticated protection market that exists. Their protection is generally developed by the software author and kept proprietary and is therefore custom developed. The business software marketplace is the mainstay of the market, and the one we will primarily address. The current business software market, based on IBM PCs is an outgrowth of the CP/M market created in the late 1970's.

HOW TO COPY SOFTWARE

Every computer comes with an operating system. This always includes some utility programs to allow a user to copy diskettes. Typically, one utility program is provided to make an exact backup duplicate of a diskette and a second utility program is provided to copy individual files one at a time from one diskette to another. The operating system also includes software to fully control the disk drive, including its recording format. All reading and writing done by the operating system uses the knowledge of the recording format to locate the data on the diskette.

A typical scenario then would be for a customer to purchase software package XYZ, place the diskette on which it is delivered in the disk drive and (in the case of an IBM PC) type DISKCOPY. The PC would promptly make a track by track copy of the software diskette onto a blank diskette.

WHY COPY PROTECT?

Why tape a friend's record? A blank tape is usually cheaper than a pre-recorded one or a record. In the case of software the disparity between the cost of the media and the cost of its contents are even greater than for entertainment products.

End-users sometimes require security for business reasons.

WHY AVOID COPY PROTECTION?

Business software has traditionally been delivered unprotected for two major reasons: reliability and saleability. Users were assumed to be "honest". Moreover, copy protection has been complex and unreliable and, hence, viewed as a negative sell in the business marketplace. Consider the following example:

An accountant selects a payroll software package for his small business computer. He is told, however, that when he purchases this package he will get one copy of the software diskette containing the program. (A second diskette is used for the actual accounting data.) He can backup the data diskette and thus retain some protection against accidents, but should he spill a cup of coffee on his software diskette, he will be unable to generate payroll until he contacts the company and obtains a new one. This situation can be very upsetting to an end user -- it might even be contrary to company policy in large corporations. Hence, the lack of copy protection has been used as a sales advantage by some publishers.

Reliability has historically been a significant problem. Some copy protection techniques have been based on detecting traits of a customer's particular computer, disk drive, or diskette (e.g. the exact rotational speed of the drive). When these traits vary, the software fails to run - believing itself to be an unauthorized duplicate. Nothing is more frustrating than to take a legitimately bought software diskette and find that it will only run on your system half the time. Letters-to-the-Editor columns in computer journals are riddled with stories of such occurrences.

HOW TO PROTECT A DISKETTE

At first glance it would seem that the protection of software is impossible so long as the user can copy it in such a simple manner. Some Operating Systems (e.g. for some Hewlett-Packard computers) provide built-in protection; i.e. the DISKCOPY utility will automatically prohibit copying a Protected diskette. Most systems provide little or no built-in protection. The goals of any protection system, therefore, must be:

1. Prevent the standard DISKCOPY utility from duplicating the diskette.
2. Don't allow the individual file copy utility to duplicate the files thus preventing the program from running on the copy.

3. Don't allow the recent flood of "Copybuster" programs (see below) to duplicate the diskette so that the program will run from the copy.
4. "The Ultimate Diskette Copy Protection": Record the diskette in such a way that the customers computer is not electrically capable of writing a duplicate. Of course, the computer must be capable of reading the diskette!!! To support the business user, backup support should be provided by the software directly.

These goals are approached by changing the recorded format of the diskette containing the software. The DISKCOPY utility knows how to find the data on the diskette because it is part of the Operating System which formatted it. Changing certain fields in the format at specific sectors can cause "Unrecoverable Read Errors" which prohibit copying. But changing the format carelessly can confuse the entire Operating System so that it cannot read the program recorded on the diskette. To avoid reliability problems, such changes must be designed by someone familiar with the Operating System, the diskette format and the computer hardware. The first line of defense, therefore, is to record the diskette in such a way that a DISKCOPY operation will fail because it can't read the original diskette.

A customer can still to format a blank diskette and copy each of the files, one by one, from the software diskette. Protection against this type of duplication must be done as part of the design of the overall protection scheme. The conventional way of doing this is to modify the protected software program so that it tests the diskette to see that the recorded format modifications are intact. This requires that the recorded format modifications be selected so that they can be read and identified by the customers computer. Furthermore, the program must be modified to include this new test.

To summarize, protecting a diskette generally requires the following two techniques:

1. Record the software disk with some specific modifications to the format in known places. If this is done correctly, it will cause the standard DISKCOPY program to believe that the disk is unreadable; i.e. it will appear to be a defective diskette.
2. Insert some additional software at the beginning of the protected application program. This software would look at the specific locations on the diskette and verify that the format modifications are in place. After the diskette is validated in this way, the program would execute normally.

HOW TO DEFEAT A COPY PROTECTION SYSTEM

In the business marketplace, the most common way to duplicate a protected diskette is to use a Copybuster program. This is a program which analyzes the exact recorded format of the diskette and attempts to duplicate it exactly. The best of these (e.g. COPY II PC on the IBM) are top 10 best-sellers. A programmer can use more sophisticated techniques for breaking a protection scheme: he can locate and bypass the software in the protected program that validates the disk format. This can be done either on the diskette or in RAM. It is common to find one instruction (a subroutine call) which can be bypassed to eliminate diskette format validation. A Debugger program provided with IBM PC-DOS provides the tracing, single-stepping and dis-assembly functions needed for a programmer to locate the critical instruction.

The games software business is even crazier. A hobbyist will consider it a challenge to decipher a protection scheme. He has the time, the tools and the desire! I don't know how to stop him. Sometimes, he's content to know that he's solved the puzzle while sometimes he must make copies for all his friends to prove himself. But it's only a matter of time until he decodes any scheme.

The current situation is akin to a Cat-and-Mouse game in which the software developers create a more sophisticated protection scheme only to have the Copybuster program authors produce a new revision to break it. This loop just keeps revolving.

THE STATE OF THE ART

Copy protection schemes today are available as standard packages that are purchased for use by a software publisher. Some publishers prefer to develop their own schemes. Protection schemes typically are broken into hardware and software types and can be custom or standard products. Publishers inventing their own custom system usually use a software scheme. Some hardware schemes include optical devices that a customer must hold up to the screen when running the program, "black boxes" that plug into some port on the back of the computer and special "Chips" (usually ROM's) that must be plugged into a PCB in the computer. In each case, the hardware device must be installed for the software to run properly.

Software schemes are based on a "signature" which is written on the diskette and must be verified. Usually, the signature is the format modification. Sometimes it includes extra information like a serial number. Some traditional signature techniques include "bad sectors", "extra sectors", invalid CRC's and skipped tracks. Copybuster programs copy all of these techniques.

Designers of protection schemes are now selecting format modifications by studying the electrical capabilities of the customers computer; i.e. the computer generally uses one Integrated Circuit which handles reading and writing on the diskette.

By analyzing the capabilities of that IC, a designer can select format patterns which can be read but not written on the customers computer. The COPY-NOT system uses such a technique. COPY-NOT also provides a validation program which is inserted onto the protected software diskette to test for the protected pattern on the diskette. The COPY-NOT validation program is designed to protect against a programmers' use of a Debugger. It will not run if a Debugger is in use. And to ease its use, no software changes are required of the publisher -- a mastering program builds a protected diskette from the COPY-NOT validation program and the desired software program. Furthermore, during mastering, the program is encrypted using a unique key to prevent disassembly by a programmer.



PRODUCT DESCRIPTION

COPY-NOT COPY PROTECTION SYSTEM

INTRODUCTION

The COPY-NOT Copy Protection System from Media Systems Technology, Inc. is designed to eliminate the unauthorized duplication of diskettes and thus reduce the associated software support costs. A basic COPY-NOT protected diskette operates the same way to the customer as an unprotected diskette, thus preserving the original software's simplicity and usability. The protection is implemented through a magnetic signature applied during the copy process -- no additional hardware or diskette modification is required.

The IBM PC and most totally IBM compatible computers which run PC-DOS/MS-DOS are supported by the COPY-NOT system. Copy protection is targeted against the PC-DOS copy/diskcopy utilities and third-party copy utilities (Copybusters).

COPY-NOT is available in two products: a Basic Protection (Model 100) package which supports only floppy disk and an Advanced package (Model 200) which supports floppy and hard disk with backup capabilities. Both use the same type of protection techniques on the diskette, but differ in features.

PROTECTION CHARACTERISTICS

- o The COPY-NOT software signature contains patterns which cannot be duplicated on a Personal Computer. This is the heart of the protection and its techniques are described on page 2.
- o Protection is transparent to the user of the software -- the customer does not know that the diskette is protected until he tries to copy it.
- o Protection is transparent to the developer of the software -- program changes are generally not required. COPY-NOT software performs all the necessary functions.
- o The application program is encrypted to protect against the more intelligent, but unauthorized, duplicators. Encryption protects against software disassembly and individual file copying. COPY-NOT software decrypts the program during loading.
- o The application program will not run if a software debugger is present in the computer. The COPY-NOT software checks the computers running environment in several ways to ensure no debugger is present.

PROTECTION SIGNATURE TECHNIQUES

For its basic protection, the COPY-NOT System relies on the magnetic and electrical limitations of the Diskette sub-systems in the IBM and compatible computers. These systems use standard Diskette Controller Chips which have built-in command sets to control reading and writing on the media. But, there are limitations to the patterns which can be recorded and read by the chips -- and reading is more flexible than writing. MST Copier Systems use our proprietary 'FDIC Controller' which does not use a standard Diskette Controller Chip, thus allowing much greater writing flexibility. COPY-NOT is based on recorded patterns which can be reliably read on a PC but cannot be written because of the limitations of the Controller Chips.

The COPY-NOT signature is validated by reading and comparing the exact pattern placed on the diskette. While most techniques test for a particular read error which is indicative of the protection, the exact match of a complex pattern is more difficult to defeat and therefore offers a higher degree of protection.

PROTECTION OPERATION

COPY-NOT operates in three stages:

1. A Mastering process which creates a protected master. This is done in two phases using both an IBM PC and the MST 6101 Copier System. During the first phase a new diskette, the Encrypted Master, is created on the PC:
 - o The new diskette is formatted with part of the protection signature.
 - o The users application program file is encrypted and is copied to the Encrypted Master.
 - o The COPY-NOT Validation Program is placed on the Encrypted Master.
 - o The feature selections for Model 200 installations (described on page 4) are made.

The second phase (on the MST 6101 Copier) transforms the Encrypted Master into a fully Protected Data Master by recording the special format fields which cannot be written on the PC.

Model 100 and Model 200 each use their own unique mastering programs. Figure 1 describes the Mastering process operation which produces a Protected Data Master for duplication.

2. The duplication process, which puts the complete protection signature on the diskette, is shown in Figure 2.
3. When the customer executes a protected program, the COPY-NOT Validation Program added during the Mastering Stage performs the following tasks:
 - o Ensures that no debugger is running in the system.
 - o Validates the signature on the diskette by actually comparing the bytes written during the copy process.
 - o Decrypts, loads and executes the protected program.

Many copy protection systems can be defeated by bypassing one subroutine call which is easily found using a debugger. This is not true with COPY-NOT because of the Validation Program.

MODEL 100 - BASIC PRODUCT FEATURES

The COPY-NOT Model 100 product is designed to protect software resident on diskette for which no backup capability is required. It features:

- o A mass-duplicated software diskette that is un-copyable on an IBM PC.
- o All the encryption/decryption and anti-debugger features of the COPY-NOT Validation Program.

MODEL 200 - ADVANCED PRODUCT FEATURES

The Advanced COPY-NOT product starts with the diskette protection facilities of the basic product. The Advanced product adds the ability to execute the software from either the hard disk or floppy disk and provides diskette backup capability. The protected software diskette received by the customer does not actually execute the protected software, but installs the software onto some other medium from which it will execute; i.e. when the customer starts the software, a menu allows him to select a diskette or hard disk device and the software is then moved to that device with its own protection. The specific features of this product are:

- o Hard Disk Support - The software can be moved onto a hard disk allowing operation without the original diskette. The hard disk copy is supplied with a software signature which is checked by the Validation Program.
- o The software is protected against copying off of the hard disk to any other medium. DOS Backup/Restore is permitted on other parts of the disk, but a full disk Restore is not allowed. The software will run only on the hard disk containing the signature.
- o Each software diskette is configured during the mastering process with the number of allowable hard disk installations; i.e. the number of times the software can be loaded onto a hard disk from the original software diskette.
- o Diskette Support with Backup - The software can be copied from the original on to one or more diskette(s) protected by a new signature and a serial number. A Validation Program on the "Backup" diskette controls the execution.
- o The "backup" diskette is protected by a signature which is beyond the ability of any current "CopyBuster" program. Even though it is written on a PC, the "backup" diskette has an encryption algorithm that detects un-authorized copies thus making it nearly impossible to duplicate. The original protected software diskette only makes "backup" copies - which are really the operational software diskettes.
- o Each software diskette is configured during the mastering process with a backup installation counter; i.e. the number of allowable diskette "backup" copies.
- o Un-Install Feature - allows deletion of protected software from the installed hard disk or "backup" floppy disk and increments the counter on the original diskette to allow the making of one additional copy. This supports a customer who upgrades a disk-

ette system to a hard disk system or a hard disk user who anticipates drive maintenance without impacting the allowable number of backup copies.

PROTECTION CONFIGURATION/REQUIREMENTS

The COPY-NOT system is compatible with the Serialization Option allowing for copy protected diskettes with serial numbers, if desired.

No additional RAM memory is required to use COPY-NOT. The Mastering process utilizes space on the master diskette for the COPY-NOT Validation Program and the encryption of the protected software. The Model 100 Validation Program requires 16K bytes of diskette space. The Model 200 Validation Program size is dependent upon the features used: 48K bytes minimum are required to support software protection on hard disk only, while a maximum of 55K bytes are required to support all the protection capabilities available. In addition, the protected program is encrypted onto a pre-reserved area of 9K bytes. If the program is smaller than that, the balance of the 9K is lost.

The Mastering program requires an IBM Personal Computer with a minimum configuration of: Either a 512K RAM system with two (2) diskette drives (with a RAM substitute drive included), a 256K RAM system with three (3) diskette drives or a hard disk (PC/XT) system with two (2) diskette drives and 256K RAM.

PACKAGING

Each model of the COPY-NOT system includes:

- o A Mastering Program for the appropriate model which runs on the IBM PC
- o A COPY-COUNT Master diskette which enables duplication of any specific number of protected diskettes. The COPY-COUNT diskette must be installed in the Copier system prior to duplication. COPY-COUNT diskettes are available in any quantity desired with a minimum order of 1000.
- o A set of Format Master diskettes for use on MST Copier Systems:
 - o A Create Master diskette used during the mastering process on either model of COPY-NOT. (See Figure 1)
 - o A set of COPY-NOT duplication Format Masters. One each is provided for single and double sided copying for each model.

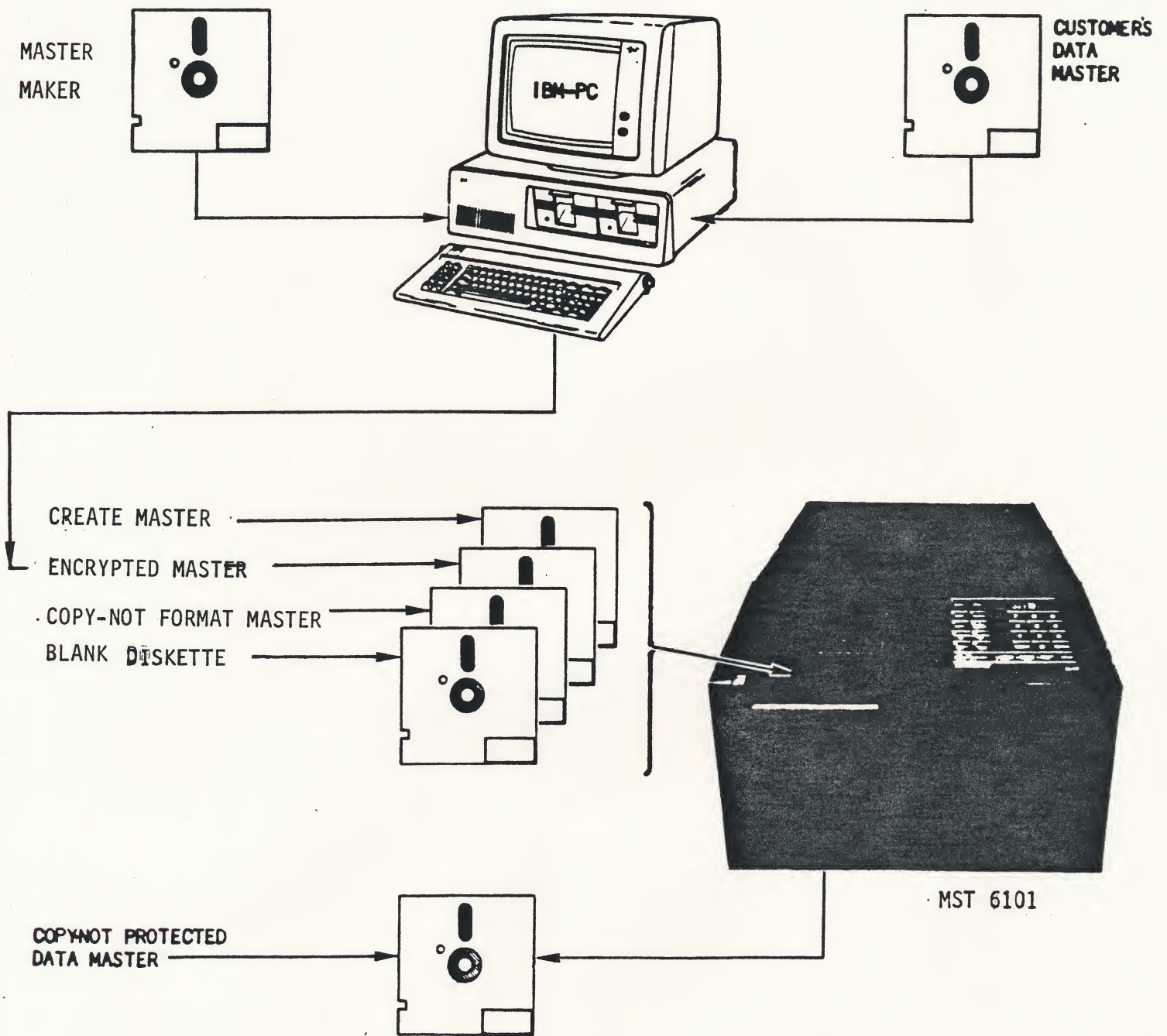


Figure 1. Protected Data Master Creation Process

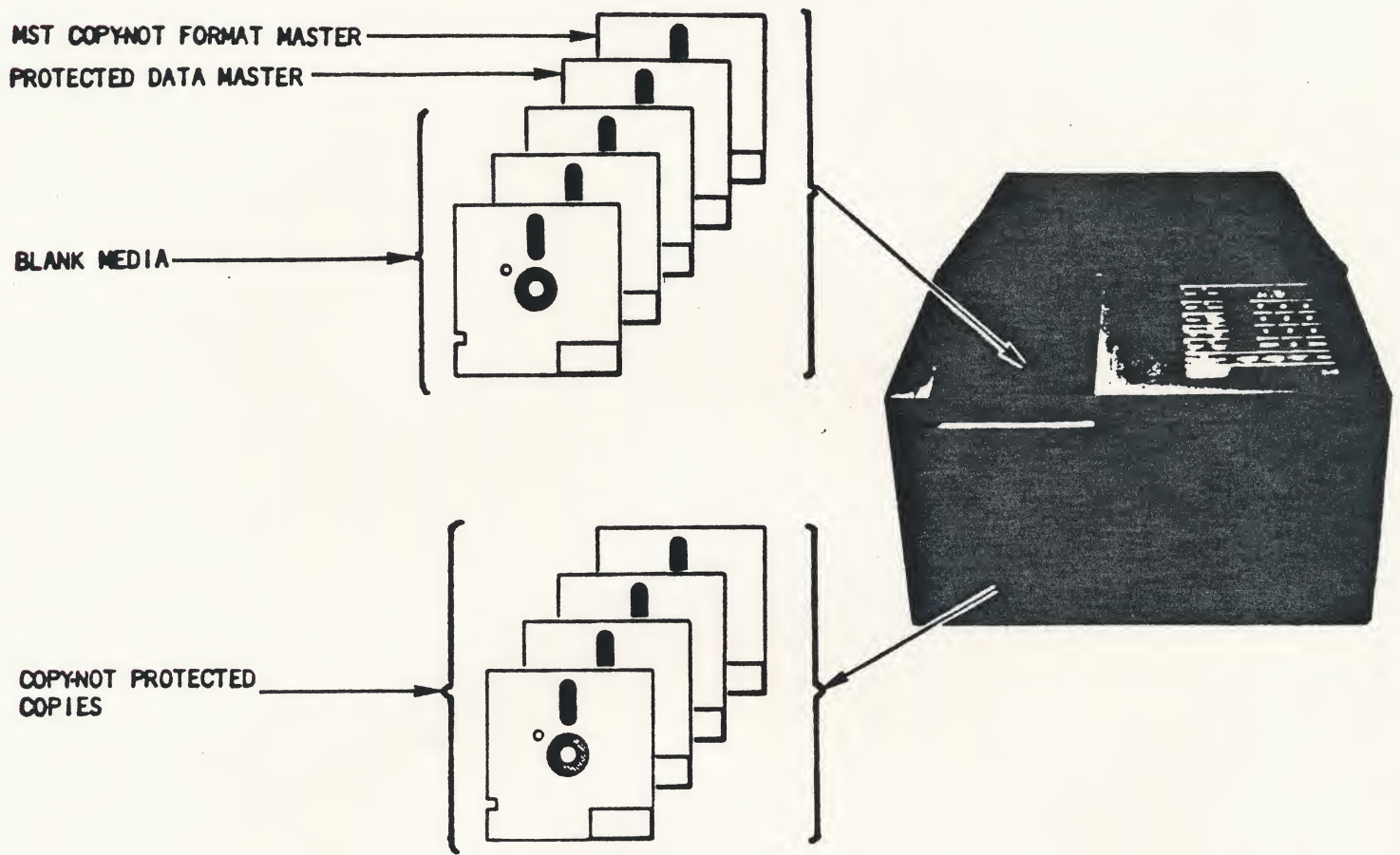


Figure 2 . Copy Protected Diskette Production



TELEX 4992344 MSTIRVCA

MEDIA SYSTEMS TECHNOLOGY, INC.

16950 ARMSTRONG AVE., IRVINE, CA 92714-4965 • 714 / 863-1201

CONTACT: DAVE LUCHINI
FOR IMMEDIATE RELEASE
NOVEMBER 1984

MEDIA SYSTEMS TECHNOLOGY ANNOUNCES DISKETTE DUPLICATION
AND COPY PROTECTION FOR IBM PC-AT

LAS VEGAS, Nev., November 14, 1984--Media Systems Technology Inc. (MST), of Irvine, Calif., is now offering high volume diskette duplication services for new 1.6 Megabyte High Density diskettes such as those used with the IBM PC-AT.

The services are targeted at software producers who are bringing products to market for the IBM PC-AT. End-users who need to duplicate and distribute diskettes for the AT will also find MST's services valuable.

MST, in cooperation with SoftGuard Systems of San Jose, CA, has extended its Copy-Not software copy protection to the PC-AT. Copy-Not, developed by MST and SoftGuard, is the most sophisticated copy protection available for IBM PCs. It has been marketed for the PC and PC-XT since March, 1984 and remains unbeaten by software pirates and hackers. Copy-Not is the best value on the market today, offering low cost along with optional features that enable software developers to purchase the level of copy protection they need. Copy-Not is priced at .20 - .90 cents per copy depending on features and quantity required.



Media Systems Technology, a privately held company founded in 1978, designs and markets a full line of automatic diskette processing equipment from standalone desk-top systems to very high-speed industrial systems. In addition, MST recently formed a software publishing division that performs a full range of services from supplying blank diskettes and envelopes to complete packaging design, diskette duplication, total printing services, product assembly and distribution. This enables MST to handle a wide array of clients ranging from the software author to the largest computer companies.



TELEX 4992344 MSTIRVCA

MEDIA SYSTEMS TECHNOLOGY, INC.

16950 ARMSTRONG AVE., IRVINE, CA 92714-4965 • 714 / 863-1201

CONTACT: DAVE LUCHINI
FOR IMMEDIATE RELEASE
NOVEMBER 1984

MEDIA SYSTEMS TECHNOLOGY ANNOUNCES LOW COST DISKETTE COPY PROTECTION
FOR APPLE II AND MACINTOSH

Media Sytems Technology of Irvine, CA., is now offering copy protection services for Apple II and Macintosh diskettes. The services are offered to anyone needing diskette duplication services from MST but who must protect software or data from unauthorized copying.

The Apple II copy protection service requires no effort on the part of software developers in order to protect their software. Unprotected master diskettes are supplied to MST and any number of protected duplicates are returned to the software developers. The copy protection process has been tested against all known "copy buster" and "backup" programs on the market and none have been able to make unauthorized copies for the Apple II. This service is offered at 15-20 cents per duplicate, depending on quantities purchased.

The Macintosh copy protection used by some popular products currently being marketed, requires that software developers insert a few encrypted proprietary subroutines into their programs. These subroutines are provided by MST. Additional proprietary protection is added when MST duplicates the master diskettes. The combination of



protection techniques provides very sophisticated protection against unauthorized duplication. This service is also offered at 15 - 20 cents per duplicate, depending on quantities purchased.

Media Systems Technology, a privately held company founded in 1978, designs and markets a full line of automatic diskette processing equipment from standalone desk-top systems to very high-speed industrial systems. In addition, MST recently formed a software publishing division that performs a full range of services from supplying blank diskettes and envelopes to complete packaging design, diskette duplication, total printing services, product assembly and distribution. This enables MST to handle a wide array of clients ranging from the software author to the largest computer companies.

THE FLOPPY DISK AND MICROCOMPUTER SOFTWARE

INDUSTRY BACKGROUND AND PROFILE

Introduction

Microcomputer software is being purchased almost as fast as it can be produced. A recent study by the market research firm, Future Computing Inc., pointed out that today's \$2.2 billion microcomputer software publishing business is quickly approaching the \$3.5 billion the record-album industry generates. The study showed that the number of new software titles published last year doubled over the previous year's and exceeded the number of record albums released in 1982.

The medium on which the software is being sold--the floppy disk--is the standard medium not only for microcomputer software distribution but computer systems of all sizes. And as the use of floppy disk-based personal and home computers increases, software and hardware manufacturers will need more and more copies of the computers' software. That means more and more floppy disks. The biggest question is whether the industry can copy and manufacture the volume of software needed to meet this burgeoning market demand.

Media Systems Technology Inc. (MST), headquartered in Irvine, Calif., designs and manufactures automatic floppy disk processing equipment. The 6-year-old company was the

2-2-2

first to market automatic floppy disk duplication and certification systems. The company has also established a full software publishing and manufacturing service for the rapidly expanding personal, business and home computer software industries.

History and the Future

In the early 1970s IBM Corp. introduced the 3741 Data Entry System, the first end-user product to incorporate a floppy disk drive, where the disk served as the input medium for computer systems. Since then, floppy disks have been so widely accepted as media for software distribution and information storage that market researchers estimate that close to 600 million disks will be shipped in 1985.

The first floppy disks were 8 inches in diameter. Diameters shrank to $5\frac{1}{4}$ inches in the late 1970s, and in 1981 Sony Corp. introduced the first microfloppy--which is $3\frac{1}{2}$ inches in diameter with a storage capacity of $\frac{1}{2}$ megabyte. The microfloppy can store approximately 250 double-spaced pages respectively.

Markets for all three sizes of floppy disk drives are expected to grow. The 8 inch floppy-disk-drive market will expand, although at a rate slower than before. The reduced growth rate is the result of the popularity of the smaller-size drives and media, whose capacities will continue to increase and whose prices will drop as technologies improve.

- more -

James Porter, industry analyst and publisher of Disk/Trend Report, expects the 8 inch floppy disk drive market to grow to \$2.4 billion by 1985, up from \$767 million in 1981. Revenues for the 5¼ inch market will grow from \$170 million in 1981 to \$1.6 billion in 1985. The sub-5¼ inch floppy disk drive market will reach \$156 million in 1985, according to Porter.

The rapid increase in the demand for floppy disks and drives has resulted from the boom in the use of personal, business and home-computer systems, which, in order to work, require software. According to an article in the September 1983 issue of Mini-Micro Systems magazine, the number of microcomputers installed in 1982 accounted for almost 80 percent of the total number of computers installed in the United States.

Floppy disks are convenient media, and floppy disk drives are reliable and relatively inexpensive mechanisms. Together they provide a useful mass storage and software interchange system for low-cost computers.

The Microcomputer Software Explosion

The microcomputer software products market is the fastest growing segment of the computer industry. According to Future Computing, there are currently 4,000 to 5,000 independent software authors. These software developers use several outlets to sell their products. Many sell their

4-4-4

packages through retail stores, currently the most popular outlet for microcomputer software. Some software companies choose to sell their products to distributors, who then sell the software to retailers. Others enter the market as software original equipment manufacturers, supplying software to hardware vendors for their systems.

A fourth alternative, software publishing, is fast becoming the choice for many independent programmers and other software authors. Like book publishers, software publishers usually look for a complete product for which they assume the job of mass production, promotion and distribution. Today, there are about 300 companies that are publishing software for independent authors, according to Future Computing. Another 1,500 to 2,000 software developers publish their packages without outside help.

THE FLOPPY DISK AND MICROCOMPUTER SOFTWARE

INDUSTRY BACKGROUND AND PROFILE

Introduction

Microcomputer software is being purchased almost as fast as it can be produced. A recent study by the market research firm, Future Computing Inc., pointed out that today's \$2.2 billion microcomputer software publishing business is quickly approaching the \$3.5 billion the record-album industry generates. The study showed that the number of new software titles published last year doubled over the previous year's and exceeded the number of record albums released in 1982.

The medium on which the software is being sold--the floppy disk--is the standard medium not only for microcomputer software distribution but computer systems of all sizes. And as the use of floppy disk-based personal and home computers increases, software and hardware manufacturers will need more and more copies of the computers' software. That means more and more floppy disks. The biggest question is whether the industry can copy and manufacture the volume of software needed to meet this burgeoning market demand.

Media Systems Technology Inc. (MST), headquartered in Irvine, Calif., designs and manufactures automatic floppy disk processing equipment. The 6-year-old company was the

2-2-2

first to market automatic floppy disk duplication and certification systems. The company has also established a full software publishing and manufacturing service for the rapidly expanding personal, business and home computer software industries.

History and the Future

In the early 1970s IBM Corp. introduced the 3741 Data Entry System, the first end-user product to incorporate a floppy disk drive, where the disk served as the input medium for computer systems. Since then, floppy disks have been so widely accepted as media for software distribution and information storage that market researchers estimate that close to 600 million disks will be shipped in 1985.

The first floppy disks were 8 inches in diameter. Diameters shrank to 5¼ inches in the late 1970s, and in 1981 Sony Corp. introduced the first microfloppy--which is 3½ inches in diameter with a storage capacity of ½ megabyte. The microfloppy can store approximately 250 double-spaced pages respectively.

Markets for all three sizes of floppy disk drives are expected to grow. The 8 inch floppy-disk-drive market will expand, although at a rate slower than before. The reduced growth rate is the result of the popularity of the smaller-size drives and media, whose capacities will continue to increase and whose prices will drop as technologies improve.

- more -

James Porter, industry analyst and publisher of Disk/Trend Report, expects the 8 inch floppy disk drive market to grow to \$2.4 billion by 1985, up from \$767 million in 1981. Revenues for the 5¼ inch market will grow from \$170 million in 1981 to \$1.6 billion in 1985. The sub-5¼ inch floppy disk drive market will reach \$156 million in 1985, according to Porter.

The rapid increase in the demand for floppy disks and drives has resulted from the boom in the use of personal, business and home-computer systems, which, in order to work, require software. According to an article in the September 1983 issue of Mini-Micro Systems magazine, the number of microcomputers installed in 1982 accounted for almost 80 percent of the total number of computers installed in the United States.

Floppy disks are convenient media, and floppy disk drives are reliable and relatively inexpensive mechanisms. Together they provide a useful mass storage and software interchange system for low-cost computers.

The Microcomputer Software Explosion

The microcomputer software products market is the fastest growing segment of the computer industry. According to Future Computing, there are currently 4,000 to 5,000 independent software authors. These software developers use several outlets to sell their products. Many sell their

4-4-4

packages through retail stores, currently the most popular outlet for microcomputer software. Some software companies choose to sell their products to distributors, who then sell the software to retailers. Others enter the market as software original equipment manufacturers, supplying software to hardware vendors for their systems.

A fourth alternative, software publishing, is fast becoming the choice for many independent programmers and other software authors. Like book publishers, software publishers usually look for a complete product for which they assume the job of mass production, promotion and distribution. Today, there are about 300 companies that are publishing software for independent authors, according to Future Computing. Another 1,500 to 2,000 software developers publish their packages without outside help.

PRESS RELEASE

REGIS MCKENNA PUBLIC RELATIONS
3000 W. MacArthur Blvd., Suite 600
P.O. Box 6100
Costa Mesa, CA 92626
(714) 241-0275

For:

MEDIA SYSTEMS TECHNOLOGY, INC.
16950 Armstrong Avenue
Irvine, CA 92714
(714) 863-1201

FOR IMMEDIATE RELEASE

MEDIA SYSTEMS TECHNOLOGY APPOINTS AL COSENTINO AS NEW PRESIDENT AND CEO

IRVINE, CA--Al Cosentino, a long-time Orange County high technology industry executive, has been appointed president and chief executive officer of Media Systems Technology, Inc. (MST), a manufacturer of duplication systems for computer software, it was announced today by Al Alcala, a company founder and chairman of the board.

Prior to joining MST, Cosentino was president and CEO of EECO Computer, Inc., and before that was senior vice president of Microdata Corp., an international computer manufacturer based in Newport Beach, California.

"Al Cosentino is one of the pioneers of the computer industry and brings to MST more than 30 years of operating experience, including many years in key management positions," said Alcala, who served as president and CEO of MST since the company was founded in 1978.

- more -

Media Systems Technology 16950 Armstrong Ave., Irvine, CA 92714 (714) 863-1201 or outside CA 1-800-443-8515

2-2-2-2

"We believe his strength and expertise in the critical areas of operations and overall management will be a significant asset to our company as we enhance our current business activities as well as strike out in new directions," Alcalá said.

Cosentino, a resident of Laguna Hills, founded the Sorbus computer service division of Management Assistance, Inc. (MAI), in 1963. He was associated with MAI since the computer company's founding in the mid-1950's, and in 1973 was appointed chief executive and operations officer of MAI/Basic Four, Tustin, Calif., a computer manufacturing subsidiary of MAI.

"I believe that MST is on the crest of a new industry wave in software duplication, much as Xerox was the leader during the early 1960's with its paper copier," said Cosentino. "It's estimated that more than 600 million floppy diskettes will be shipped in this country during 1985 alone, and that represents tremendous potential for a company in the software duplicating business."

Cosentino said MST will concentrate on building its sales staff in the field for its software duplication systems and expanding its software publishing service centers in the U.S. and internationally.

Alcalá said that as chairman of the board he will be working closely with Cosentino to focus on long-range

- more -

3-3-3-3

planning, new product and market development, and establishing closer industry ties with other high-technology companies.

Media Systems Technology, a privately held company founded in 1978, designs and markets automatic diskette-processing systems. The company has developed an extensive range of high-speed copier systems and introduced a series of stand-alone desktop floppy-disk copiers. MST's software publishing division provides software manufacturing and complete publishing services.

More than 150 standard or custom-tailored software formats can be certified, copied, serialized and copy-protected on MST automatic diskette copying and certifying systems. In addition, the software division provides a total publishing service, including automatic labeling, diskette envelopes, and complete packaging design and printing services.

A.M. (A1) COSENTINO
Biographical Sketch

A.M. (A1) Cosentino, president and chief executive officer of Media Systems Technology, Inc. (MST), is one of the pioneers of the computer industry and brings to the company more than 30 years of high technology industry experience, including many years in key management positions.

Prior to joining MST, Cosentino was president and CEO of EECO Computer, Inc., and before that was senior vice president of Microdata Corp., an international computer manufacturer based in Newport Beach, California.

Previously, Cosentino founded the Sorbus computer service division of Management Assistance, Inc. (MAI), in 1963. He was associated with MAI since the computer company's founding in the mid-1950's, and in 1973 was appointed chief executive and operations officer of MAI/Basic Four, Tustin, Calif., a computer manufacturing subsidiary of MAI.

CHRISTOPHER MINER
Biographical Sketch

Christopher Miner, vice president of finance and administration and one of the firm's first employees, utilizes his expertise in finance and management to keep fiscal operations at Media Systems Technology, Inc. (MST) running smoothly.

Prior to joining MST in 1981, Miner served as financial systems analyst at Flying Tigers. He has also worked as the financial services manager for International Customs Services, where he supervised credit, collections and financial operations for his office. In addition, he has served as the general manager of an advertising agency.

Miner holds a Bachelor of Arts degree from the University of New York and an MBA from California State University, Dominguez Hills.

RICHARD LANGLOIS
Biographical Sketch

Richard Langlois, as director of software manufacturing and publishing, oversees the most recent addition to the line of products and services at Media Systems Technology, Inc. (MST) - the software publishing division.

Langlois can attribute much of his computer knowledge to the many management positions he has held within the industry. Prior to joining MST, Langlois spent three years at Digital Equipment Corp., where he served as plant manufacturing engineer and new product manager. Before his positions at DEC, he acted as manager of software manufacturing and distribution at Data General Corp. In addition, he served as senior national accounts manager in engineering, also for Data General, and spent eight years with the Honeywell Corp.

Langlois is a graduate of Northeastern University, with a Bachelor of Science degree in industrial management.

ERIC M. KADISON
Biographical Sketch

Eric M. Kadison, co-founder and vice president of product planning and development at Media Systems Technology, Inc. (MST), brings to the company a wealth of experience from his varied background in the computer industry.

With a Bachelor of Science degree in physics from New York State University at Stony Brook, Kadison has held many responsible positions in the computer and electronics field. Prior to co-founding MST, Kadison was manager of the software department for General Systems International, where he supervised the development of turnkey computer products and computer-based test equipment.

He also served as product manager at ComputerAutomation, Inc. and at Varian Data Machines and while there, designed minicomputer operating and data communications systems. Kadison has also held positions at IBM and Data Networks, where he developed data communications networks.

AL ALCALA
Biographical Sketch

Al Alcala, company co-founder and chairman of the board of Media Systems Technology, Inc. (MST), launched his pioneering company in 1978 with a solid marketing plan that has propelled MST into the industry leader it is today.

Alcala served as president and chief executive officer of the corporation until September, 1984. Prior to forming the corporation, he served as marketing director for Microdata, where he was responsible for the marketing of advanced computer products. Previously, Alcala held the same position at General Systems International, where he was involved in marketing flexible disks and systems test equipment.

In addition to his executive and management experience, Alcala also enjoys an engineering background, having held various technical positions with Pertec Business Systems and Scientific Data Systems.

Alcala is a graduate of Santa Monica College, with a Bachelor of Science degree in engineering, and also holds a certificate of management from the Univeristy of California at Irvine.

Automation Comes to a Software Factory

It is a paradox that in an industry of sophisticated computer operations, those who produce microcomputer software to make our lives easier have been struggling to manually produce each diskette that emerges from their warehouses.

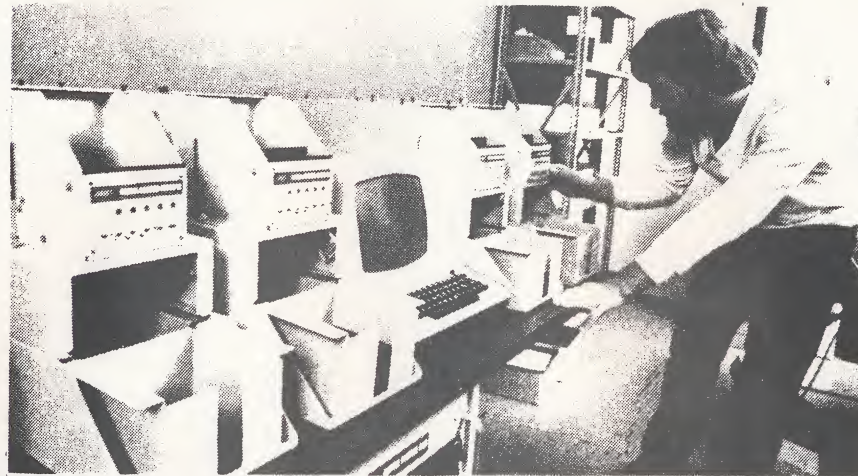
With the boom of independent software houses in recent years, the pressure is on to produce greater numbers of software packages more quickly.

Software publishers can no longer lag behind the rest of the automated market.

In order to keep pace in this rapid growth industry, automation is required. Peachtree Software Inc. of Atlanta, is an example of one of the "top 10" microcomputer software companies that did exactly that.

Peachtree is the classic example of a small start-up company suddenly making it big. In just a few short years, it has evolved from Retail Sciences Inc., a turnkey systems distributing firm, to Peachtree Software Inc., a subsidiary company of MSA, the largest independent supplier of software in the world.

According to Mike Heazel, director of Corporate Services for MSA, Peachtree's production area began with one



While software developers have created programs to ease the workloads of the users, many have only recently begun to replace slow manual duplication procedures.

"Most people neglect to figure in the labor cost, which can be very high for technical people here in Atlanta," Heazel said. "The MST equipment has twice the output per operator of some of the other disk duplicators."

In order to make a small capital equipment investment, it was decided that Peachtree would begin by using the MST 5248 desktop model in its software factory.

With the 5248, Peachtree was able to

on other projects because the duplicator requires attention approximately every 50 minutes to remove the completed diskettes and reload the system.

While Peachtree's previous method required five or six people operating a large number of microcomputers for software copying, one person now operates six 5248's per shift, according to Heazel. As Peachtree's production needs expanded, it was quickly realized that the addition of an industrial copying system

"Diskettes are duplicated according to the type of order. We have the shelf stock of various programs in a number of formats. We duplicate these in small quantities on the desktop units. The national account orders are large volumes of one particular program for a specific computer. We use the 825 for these orders," Heazel explained.

Peachtree's national accounts include Epson, Wang, Hewlett-Packard, NCR, Data General and others.

"After the diskettes are duplicated, we apply the labels. The small runs are done by hand. Large orders are done by machine. A great deal of our printing is done in-house, producing about 95 to 110 million impressions per year. Some of our printing is done outside, though, depending on the type of press work required," Heazel continued.

From labeling, the diskettes are moved to a production area where they are inserted into sleeves and assembled with documentation and service support cards. Then the completed product is ready for shipping.

All along the way there is an intensive quality control process. There are three

The pressure is on to produce

Diskette duplication systems

The pressure is on to produce greater numbers of software packages more quickly.

employee who answered the phone, took orders and duplicated the diskettes—one at a time. In 1981, there were four people in a room full of microcomputers producing software manually. Then in late 1982, with the explosion in the micro-computer software market, Peachtree came under real pressure to step-up production, and “the world’s first” software factory was opened.

Selection

In one of the first steps in automating a previously manual operation, Peachtree began to survey the marketplace for a diskette duplication system for its software factory.

The three main floppy diskette duplicator manufacturers to be considered were Media Systems Technology, Irvine, Calif., Applied Data Communications, Tustin, Calif, and Formaster, San Jose, Calif. The factors Peachtree used in evaluating the equipment were the cost performance ratio, reliability, amount and cost of downtime, availability of service and parts, complexity of the duplicating machine and its design, the quality of the product produced, and the labor cost.

Purchasers of the different duplication systems were questioned. Each system was meticulously studied and the cost of the labor calculated.

With the 5248, Peachtree was able to hire people to perform diskette duplication who did not have technical knowledge. On the other hand, technical people could be hired who could utilize their skills doing something else while the system operated without being monitored.

The MST Model 5248 Desktop Copier automatically formats, copies, sorts, and verifies diskettes. It is a 5¼” diskette-based system that features automatic two-level sorting and collating of accepted and rejected diskettes into separate bins.

The user pushes a few buttons to set up the system for copying, and the diskettes are automatically loaded into the copy drive. This allows the operator to work

expanded, it was quickly realized that the addition of an industrial copying system, the MST 825, would meet Peachtree’s more intense copying needs. The 825 is a high-speed, large-volume, multi-station production system.

“Originally, we thought we’d sell the desktops and just use the 825, but we’re keeping all running at full speed, and we see that we’ll soon need to expand again,” commented Heazel.

The actual volume of packages that are produced at Peachtree’s software factory expanded tremendously in 1983 when 260,000 units were produced with an average of 2.5 diskettes per software product. Heazel sees this volume doubling in 1984.



One person operates six 5248 Desktop Copier models per shift.

Diskette duplication systems have made the difference in Peachtree’s ability to meet market demand.

people responsible for quality control—a manager and two technicians.

“When a company grows as fast as we are, it has to concentrate on quality control. That’s why we have Buddy Ray, manager of Corporate Support, in charge of that area. The production manager does not oversee this process for obvious reasons,” Heazel remarked. “Our target is to assure that we are 95% confident of a 98% AQL (acceptable quality level).”

The MST equipment verifies each diskette as it is being copied. After the diskettes are duplicated, they are randomly checked on the native computer. The diskettes are rechecked for correct product assembly and reverified intermittently. Packages are pulled from the production line at random to insure adherence to Peachtree’s quality standards.

Diskette duplication systems have made the difference in Peachtree’s ability to meet market demand. “We are moving toward having a fully automated assembly line at the software factory, where each function will flow closer on conveyors.

“In the future, with innovations like diskette duplication systems, I see the process becoming completely automated from start to finish,” Heazel concluded. □

Disk processor speeds firm's software distribution

Automatic machine cuts diskette duplication time for Big Eight accounting company

NEW YORK — An automatic diskette processing machine has solved a nagging microcomputer software distribution problem for one Big Eight accounting firm.

Coopers and Lybrand has been developing business software at its headquarters here for internal use by its branch offices for more than 20 years. The company has also been selling its software externally for 15 years.

The firm's software focuses on auditing and accounting, business planning and financial planning, statistical sampling and analysis and tax planning analysis.

According to Stanley Halper, national director of Coopers and Lybrand's computer audit assistance and national electronic data processing group, the company two years ago introduced micros to its branch offices for its accountants to use in handling client cases.

Software for accountants

To supply the accountants with applications software, the company employs more than 100 programmers, who develop programs on an assortment of more than 20 brands of micros, including IBM, Apple Computer, Inc. and Tandy Corp.

But, Halper said, a problem arose when copying the program diskettes for distribution to branch offices worldwide — a task that required one clerk's full-time attention — became a massive bottleneck.

"Copying the diskettes efficiently was our central concern," Halper said. "We have 100 offices, and each office requires an average of 10 of our software products. The products are subject to constant modification due to shifts in government regulations or because of ordinary updates generated by internal policy or procedural changes.

"If we make a change, it means

there are at least 1,000 diskettes that have to be generated again," he said. "We had a large duplication problem."

Automatic diskette processor

After reviewing a variety of automatic duplication equipment, Coopers and Lybrand selected Irvine, Calif.-based Media Systems Technology, Inc.'s Model 100Y-2 automatic diskette processor.

Halper said the system consists of a disk drive with a feed mechanism for automatically inserting diskettes for read or write functions. The drive processes the diskettes into one of two bins for either accepted or rejected diskettes.

The unit is connected to Coopers and Lybrand's Zilog, Inc. MCZ-250 microcomputer, to which it appears as a normal 8-in. disk drive. The micro controls the loading and unloading of the diskettes through an 8-bit parallel loader interface.

The loader itself uses a modified version of the Zilog program that formerly enabled the Coopers and Lybrand operator to manually copy diskettes.

No operator intervention

Halper said the Model 100Y-2 automatic diskette processor incorporates a stacking capacity of up to 50 diskettes for processing any format or density — single- or double-sided — without operator intervention.

The loader's automatic operation allows operators to stack and remove diskettes without interrupting the copying process, and individual diskettes can be sequenced through both load and unload cycles by use of control and status indicators provided on the loader's control panel.

"The major benefit of the loader is that we do not have to hire a full-time person to operate the machine," Halper said. "That has more than compensated for the cost of the unit. It gives our people the ability to start up a program and just walk away. And the system can do in one day what used to take three days to do manually. We can put in 50 diskettes and just ignore the system."

For 15 years, Coopers and Ly-

brand has been selling its software to external users via the General Electric Co. American Institute of Certified Public Accountants catalog. The company is now the largest supplier of accounting, auditing and tax software in the GE network.

Micro software marketplace

The company also decided to enter the micro software marketplace in 1982, offering products in eight categories. The products consist of anywhere from five to 10 diskettes, depending on the application and the host system.

Halper said the company intends to purchase another Media Systems Technology processor to support external micro software sales.

"We wanted to carry over the policy of providing quality products into the software we sell on the open market," he said. "The sheer size of the task compels us to continue the automation process of which the diskette processor is an integral part."

AUTOMATIC DISKETTE COPIERS 5000/6000 SERIES



MST™

The Automatic High-Speed Diskette Duplication System...

MST's new 5000/6000 Series of Copiers incorporates a hard disk to produce the lowest cost per copy of any desktop duplication system on the market today. This Winchester disk-based system is so highly reliable that accurate copies are produced time after time. The completely automatic 5000/6000 Series formats, copies, verifies and sorts diskettes with minimum operator intervention and is as easy to use as a paper copier.

The system requires only 15 minutes of operator training yet it provides many unique features. The flexibility of the 5000/6000 Series enables it to duplicate the majority of formats being produced today. A job streaming mode of operation allows the user to assemble a series of copy jobs in the hopper and they are automatically copied in the sequence specified. Operational statistics are maintained on all elements of production—allowing for optimum utilization of the system and proper scheduling of preventative maintenance.

Individual models are available for 5 1/4 inch 48 TPI/96TPI diskettes; and for 3 1/2 inch diskettes. The 6000 Series are high throughput, high volume systems intended for heavy production usage. GCR

and an Extended Hopper are built into this fully featured series. The 5000 Series provides the same features in an inexpensive package for medium throughput needs thanks to the use of the Winchester disk drive. Any 5000 Series system can be field updated to the 6000. GCR and Hopper Extension options are also available.

The system incorporates sophisticated electronic margin code testing procedures—a technique which provides the internal discrimination necessary for the copier to recognize and reject marginal diskettes. This test for quality far exceeds those tests incorporated in any other duplication system on the market. The results-diskette recording accuracy that is unsurpassed in the industry.

All of the features of the 5000/6000 Series ensure that programs which are duplicated by the system will have the widest degree of compatibility possible.

MST has worked with IBM, DEC Hewlett Packard, Apple and many others over the last six years to produce accurate, highly reliable diskette duplication systems. This on-going experience has produced the 5000/6000 Series product design.

MAXIMUM THROUGHPUT CHARACTERISTICS

Diskette Size	Side Recorded	Tracks Per Diskette	Tracks Per Inch	5000 Model	No. of Diskettes Per Hour	6000 Model	No. of Diskettes Per Hour
5 1/4"	1	35	48	5101	88	6101	183
5 1/4"	1	40	48	5101	68	6101	125
5 1/4"	2	40	48	5101	38	6101	82
5 1/4"	1	80	96	5201	53	6201	102
5 1/4"	2	80	96	5201	27	6201	53
3 1/2"	1	80	135	5301	63	6301	123
3 1/2"	2	80	135	5301	36	6301	76

FEATURES

- ☐ Fully Automatic Operation
- ☐ Complete verification, read after write
- ☐ Single and double density recording
- ☐ Unique Job Streaming Operation
- ☐ Self Diagnostic Program
- ☐ Multiple industry standard formats
- ☐ Optional custom copy protection for greater security
- ☐ Optional Serialization Program
- ☐ Optional Apple II and Commodore formats
- ☐ Optional Apple Macintosh
- ☐ Optional Interchangeable 48/96 Track Drive Assembly
- ☐ Optional 48/96 Track Slave Loader
- ☐ Optional high capacity hopper extension on 5000. Standard on 6000

SPECIFICATIONS

Diskette Capacity	5000 Series	6000 Series
Input Hopper	40 Diskettes	100 Diskettes
Output Bins		
Accept	40 Diskettes	100 Diskettes
Reject	7 Diskettes	25 Diskettes
Power Requirements		
AC Voltage	115V + 10%, 5A, 50/60Hz (International voltage available)	

CORPORATE HEADQUARTERS 16950 Armstrong Avenue • Irvine, CA 92714 • Phone (714) 863-1201 • TELEX 4992344 MSTIRVCA

MST is Trademark of Media Systems Technology, Apple is a registered Trademark of Apple Computer Inc., Macintosh is a trademark licensed to Apple Computer Inc.

SOFTWARE PUBLISHING SERVICES



Media Systems Technology was founded in 1978 to answer the demand of diskette manufacturers for automated solutions to the growing requirements to process millions of diskettes per month. MST's first systems automatically initialized diskettes—a task which is now only part of a series of steps which enable the fast, efficient duplication of diskettes in mass quantities.

Since its start, Media Systems Technology has supplied automatic diskette processing equipment to almost every major diskette

and computer manufacturer in the world. MST's present installed base includes: 3M, IBM, DEC, Apple, Hewlett Packard, Honeywell, Tandy, Atari and Burroughs. Many systems are in operation 24 hours per day, certifying and initializing media and reproducing applications and operating software.

In the five years since its incorporation, Media Systems Technology has experienced tremendous growth, establishing offices nationwide and sales/service worldwide. MST is positioned for continued growth in a market that is just beginning to explode.

Every MST duplication system has stringent built-in testing parameters and is configured for 100% bit-by-bit verification of every piece of media processed. Stressing high quality performance assures the ability to mass produce error-free diskettes, time after time. Software publishers can now maximize the industry opportunities by allowing MST's service groups to support their software manufacturing needs.





Complete Software Publishing Services.

Just as large traditional book publishing firms seek quality printing companies for production, software publishers can look to MST for expertise in manufacturing operations which support their needs. MST's plants are located on the East and West Coasts of the U.S. Plans call for expanded plant sites worldwide.

All MST software manufacturing facilities utilize the same high-quality equipment as leading OEMs and software houses and maintain a stringent level of security to ensure customer confidentiality: the same confidentiality maintained by IBM, HP, Apple, DEC, and Peachtree.



MST's software manufacturing facilities are set up as restricted areas with very limited access. Master programs are securely stored. Non-disclosure agreements are signed.

MST has made significant capital equipment investments and attracted some of the industry's *best* people in process and quality control, protection and encryption techniques, diskette technology, packaging and printing support, and distribution services. The result—complete software publishing support.

Thorough understanding. Expert in software production/duplication, MST understands the importance of each critical step—from diskette certification and duplication to document printing, packaging and delivery. MST offers every service necessary to produce a complete quality package ready for the retail shelf.

Media selection. MST specializes in format and program duplication onto 8", 5.25", or 3.5" media of single or double density on single or double-sided diskettes. A wide range of public domain formats are available as well as the software engineering staff necessary to develop proprietary formats. Volume purchasing contracts and close working relationships have been established with major media manufacturers. Media may also be supplied or selected by the customer.

Copy protection. MST recognizes that as a developer of software, you have a substantial investment to protect. We can supply you with numerous protection techniques or implement one unique to your requirement.

Serialization. Serialization is available for inventory control, tracking customer updates, and providing audit trails against piracy. MST can serialize on the diskette or on the label with a variety of standard schemes or develop a scheme to meet your needs.



Packaging design. Packaging influences sales. MST offers a wide variety of packages as well as the service of developing special packaging unique to your product. Publisher's package design can be incorporated with MST completing the necessary steps following product specification.

Printing and assembly. MST's objective is to supply you with the complete service to ready your product for market. This includes printing or silkscreening your package cover or insert, duplicating and labeling diskettes and inserting diskettes in envelopes. All components will then be tested, assembled and shipped.

Quality control. Each component of the product is stringently tested to assure that a quality, reliable product is delivered.

Diskettes are tested before and after program duplication; one level of verification being resident in the copier system. Process control contributes toward adherence to quality standards and delivery of a cost effective product. Strict Quality Control means reduced returns from the customer.

Inventory and distribution. The crucial element for success is timing and keeping firm control on inventory levels. MST will produce packages on demand and drop-ship at your request wherever your finished product needs to go.

Superior quality in a rapid growth industry. In its rapid expansion to fill the needs of the marketplace, MST has never lost sight of what has made them the leading manufacturer of automatic diskette certification and duplication equipment—*quality*.

Extensive research and development is an on-going commitment—necessary to meet the growing market requirements for new forms/sizes of magnetic media. Because of MST's commitment, new products are constantly being developed and tested to keep us at the leading edge of technology.

Unsurpassed service. For the last several years, MST has gone a step further for its customers—it has provided disk duplication for those who could not meet their production demand internally. First, MST produced systems capable of duplicating over 400 diskettes per hour, then we developed a Desktop copier for lower volume requirements. Now, we offer complete Software Publishing services...Quality...Protection...Everything you need to meet your market demands.







**Software Publishing
Service Centers**

West Coast
Corporate Headquarters
16950 Armstrong Avenue
Irvine, CA 92714
(714) 863-1201
Telex: 4992344 MSTIRVCA

East Coast
100 South Hopkinton
Hopkinton, MA 01748
(617) 435-5381

Canada
Reprosoft, Inc.
5250 Finch Avenue E.
Scarborough, Ontario
Canada M1S4P3
(416) 297-0150

Sales and Service Offices

Northern California
1250 Oakmead Parkway
Suite 210
Sunnyvale, CA 94086
(408) 720-8930

Southeastern
100 Galleria Parkway
Tower #1 Suite 400
Atlanta, GA 30339
(404) 956-7974

Southwest
1 Galleria Tower
13355 Noel Road
Suite 500
Dallas, TX 75240
(214) 458-7390

Midwest
2021 Midwest Road
Suite 300
Oak Brook, IL 60521
(312) 953-8530

**ANY WAY
YOU STACK IT,
NOBODY
COPIES
FLAWLESS
FLOPPIES
FASTER
THAN MST.**



Introducing the MST Series 6000 floppy disk copier. No desktop copier reproduces floppies faster and more accurately. Or at a lower cost per copy. Our Winchester disk based technology is the reason why. This stand-alone copier will single-handedly format, copy, verify and sort up to 140 flawless floppies per hour. All automatically!

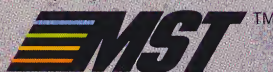
The Series 6000 easily handles most of today's industry standard formats, including IBM, Apple & Commodore. Its versatile job streaming feature allows you to load a series of copy jobs at once, each with a different format master, and have them automatically reproduced in proper sequence. And thanks to MST's exclusive Margin Code Testing, you'll get consistently high quality copies every-time. Just to be sure, MST is serviced nationally by ITT®. Sound complicated? It's not. In fact, only about 15 minutes training is required to operate the system. And once the copy cycle starts, the operator is free to leave, work on other projects, and be more productive.

For more than six years MST has led the way in diskette duplication technology.

Everything from industrial volume initializers and certifiers, to high speed computer-based copying systems capable of reproducing 550 floppies per hour. Rather not handle your copying in-house? Then look into our convenient software publishing facilities. Full service from diskette certification and duplication, to copy protection and serialization, as well as complete packaging design, printing, assembly and distribution.

Find out more about MST and our Series 6000 desktop copier and Software Publishing services.

Mail in the attached coupon or call toll free, outside California **1-800-443-8515**, in California call Corporate Headquarters located in Irvine, CA. **(714) 863-1201** and in the East Coast, call our Diskette duplicating center located in Hopkinton, MA. **(617) 435-5381**.



**World Leader in Diskette
Processing Solutions**



YES, I want fast and flawless floppy copies!

I'm interested in: check one

- ☐ Desktop Copier
- ☐ Industrial Production System
- ☐ Software Publishing Services
- ☐ Duplication of Diskettes

Name

Title

Company

Address

City/State/Zip

Telephone

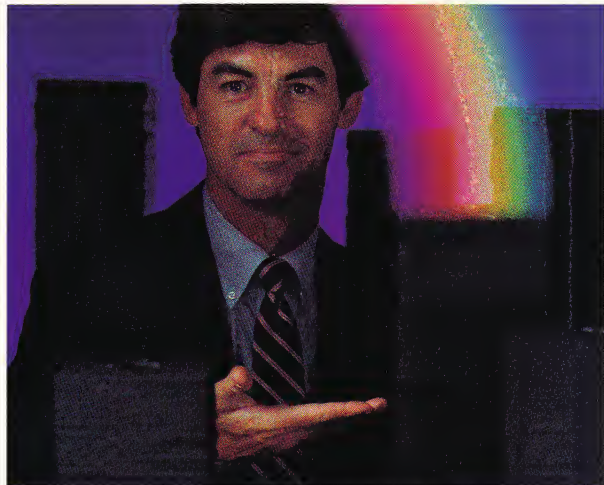
Please call or mail coupon to:
Corporate Headquarters:
Media Systems Technology
16950 Armstrong Avenue
Irvine, CA 92714
(714) 863-1201
Outside California Toll Free
1-800-443-8515
Diskette duplicating center
located in: Hopkinton, MA.
(617) 435-5381.

G101 A



MEDIA SYSTEMS TECHNOLOGY • Corporate Headquarters, 16950 Armstrong Avenue, Irvine, CA. 92714 (714) 863-1201. Outside CA. 1-800-443-8515. Sales Offices located in San Jose, CA., Dallas, TX., Chicago, IL., Atlanta, GA., Hopkinton, MA. • Canadian Office located in Toronto, Canada.

INTRODUCING A NEW CONCEPT IN SOFTWARE DUPLICATION: FREEDOM OF CHOICE.



Media Systems Technology offers you Freedom of Choice... If you need to duplicate and distribute software—MST is the company to support you. Hardware systems to automate your production or total software publishing services. MST's systems and services now support all facets of your software manufacturing.

MST, the leading manufacturer of automatic diskette duplication equipment, supplies and supports systems for IBM, DEC, 3M, Apple, Hewlett Packard, Peachtree...

HIGH QUALITY DUPLICATION SYSTEMS

MST manufactures systems for 8", 5.25", and 3.5" media that support every major format. We provide technical expertise in developing formats—under complete non-disclosure. MST's mini computer-based systems automatically duplicate 1000's of diskettes a day with 100% verification. For lower volume requirements, our automatic desktop copiers can duplicate and verify a wide range of formats including Apple, IBM, DEC, HP, to name a few. Designed-in test parameters insure the highest quality for your software product.

TOTAL SOFTWARE MANUFACTURING SUPPORT

MST recognizes many companies prefer to have a third party handle software production. We can provide complete software manufacturing services on the East and West Coast. Duplication, serialization, copy protection, format development, packaging design, documentation printing and product assembly all under complete confidentiality. By MST providing these services, you reduce fixed costs, control distribution, lower inventory, and most importantly, realize rapid turn-around time of a high quality finished software product.

Again, whether your needs are hardware or software publishing services—MST is the company to offer you Freedom of Choice.

Corporate Headquarters
16950 Armstrong Ave., Irvine, CA 92714, (714) 863-1201

East Coast
100 South Street
Hopkinton, MA 01748
(617) 435-5381



Media Systems Technology, Inc.

MST IS LABELED BY APPLE ...AGAIN.



First we were certified as the diskette duplication service available for authorized Lisa™ software developers.

Now our Software Publishing Service is Apple-endorsed to copy Macintosh™ software.

And not only are we certified to copy Macintosh microdisks, but we use the only automatic microdisk duplication system available today—ours.

We offer top quality, high-volume, fast turn-around software services for Macintosh software developers. This includes everything from copying to packaging and shipping.

With our 6 years of expertise and unmatched quality in the diskette copying business, it is no wonder Apple labels us among the best—we are.

Get involved with quality, give MST a call today.

*Media Systems Technology
16950 Armstrong Ave.
Irvine, CA 92714
Phone: (714) 863-1201
or outside CA 1-800-443-8515*



Media Systems Technology, Inc.

I want to get involved with Quality...
Contact me about your introductory offer for
diskette duplication for Apple Macintosh...

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Mail to: Media Systems Technology, 16950
Armstrong Ave., Irvine, CA 92714. (714) 863-1201
or outside CA 1-800-443-8515

MA101 R 5-1

© 1984 Media Systems Technology
Apple and Lisa are trademarks of Apple Computer, Inc.
Macintosh is a trademark licensed to Apple Computer, Inc.